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ABSTRACT:

PROBLEM TO BE SOLVED: To provide a method for producing a seasoning material consisting of a yeast extract containing the content of the yeast extracted from yeast cells in a large amount and a seasoning material containing all of the active components in the yeast cells.

SOLUTION: The characteristic of this method for producing a seasoning is to crush yeast cells by a high pressure impact-type homogenizer at <10°C temperature of the cells and subject to autolysis, and also to crush the yeast cells by the high pressure impact-type homogenizer, extract the crushed cells by a hot water, and then separate the yeast cell walls which can be made fine particles, by a centrifuge.

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(54)【発明の名称】　調味料の製造法

(57)【要約】

【課題】　本発明は酵母菌体から酵母エキスの含有量を多く含んだ酵母エキスよりなる調味料並びに酵母菌体の有効成分を悉く含有する調味料を提供する。

【解決手段】　酵母菌体の品温を10℃を越えない温度で高圧噴射衝撃式ホモゲナイザーにより破砕し、自己消化することを特徴とする調味料の製造法、並びに酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕し、熱水抽出し、後に微粒化できなかった酵母細胞壁を遠心分離することを特徴とする調味料の製造法。

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【特許請求の範囲】

【請求項１】　酵母菌体を品温を10℃を越えない温度に保ちながら高圧噴射衝撃式ホモゲナイザーにより破砕し、自己消化することを特徴とする調味料の製造法。

【請求項２】　酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕し、熱水抽出し、後に微粒化できなかった酵母細胞壁を遠心分離することを特徴とする調味料の製造法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、酵母菌体の酵母エキスよりなる調味料及び酵母菌体の破砕物よりなる調味料を製造する方法に関する。

【０００２】

【従来の技術】酵母エキスは、肉エキス、野菜エキス、魚介類エキス等と共に化学調味料にない調味を示すものとして広く食品素材とすることは知られている。酵母エキスは酵母菌体を原料とし製造されている。酵母菌体はその外側を細胞壁で覆われているため、酵母エキスを製造する場合には、酵母細胞壁及び細胞膜を物理的に破砕する方法、或は酵母細胞壁及び細胞膜を細胞壁溶解酵素、蛋白質分解酵素、自己消化法等の酵素的に酵母菌体の細胞膜を化学的に変性し、酵母中の有用な蛋白質、核酸、ミネラル、糖、脂質等を含むエキスを、熱水抽出、食塩、塩化カリウム等の塩類、酸、アルカリ或はドデシル硫酸ナトリム等の界面活性剤、アルコール等で抽出する方法が知られている。そして、物理的に破砕する方法としては、例えば、微生物菌体を液体窒素等で凍結し、凍結状態で微生物菌体を破砕する方法（特公昭５８－８６９号公報）。ボールミル等の媒体ボールにより破砕する方法（特開平５－２５２８９４号公報）。高圧ホモゲナイザーで破砕する方法（特開昭４８－５８１６６号公報、特開昭５４－２８４６７号公報）、高圧ホモゲナイザーにより酵母の生細胞の50%以上を死滅させ、これを45～60℃の温度で自己消化させる酵母エキスの製造法（特公昭５０－２５５３９号公報）等が開示されている。

【０００３】更に、酵母細胞壁を高圧噴射衝撃式ホモゲナイザーで破砕し、この破砕液から種々の抽出処理を施して、酵母菌体中の特定成分を抽出分離する方法としては、高圧噴射衝撃式ホモゲナイザーで破砕し、塩類の水溶液又はアルカリ溶液で蛋白質を抽出する方法（特公昭５１　３９２４０号公報）。酵母菌体の細胞壁を破砕し、pH2～5、40℃以下の条件でグルタチオン含有液を抽出する方法（特公昭５７　１８２００号公報）。酵母菌体の細胞壁を高圧噴射衝撃式により破砕し、食塩を添加してpH6.5～8.5で加温抽出して脱核酵母及びリボ核酸を得る方法（特開昭５０－１３５２７４号公報）等が開示されている。

【０００４】

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【発明が解決しようとする課題】本発明は酵母菌体内に有する蛋白質、核酸、ミネラル、糖、脂質等の栄養素、呈味性の優れた各種成分を調味料として提供する課題について種々検討した。そして、従来食品素材として用いられている酵母エキスの製法において、酵母菌体をホモゲナイザーで破砕しこれを自己消化して酵母エキスを得る方法が酵母エキスの呈味的にも栄養的にも他の方式よりも優れた方法であることに着目し、この方式について研究を行った。この方式についての従来の方法は、上述の特公昭５０－２５５３９号公報の方法が開示されている。この従来の方法においては、酵母エキスの収率を高めるため、酵母菌体を圧力式ホモゲナイザーで３回処理を行った後、自己消化して酵母エキスを製造している。しかし、この方法ではホモゲナイザーの破砕能力が低いため、破砕処理を３回も行わなければならず、その結果高圧処理に伴う温度上昇により、自己消化に重要な酵素、蛋白質等が変性して従来の自己消化法で得られた酵母エキスとは呈味性が全く異なったものとなる。本発明は、破砕処理による温度の上昇を抑制して効率良く自己消化し呈味性が優れた調味料を収率よく製造する方法を提供するものである。また、従来は酵母菌体を破砕処理したものを自己消化又は化学的抽出処理を施すことなく、そのまま調味料とした酵母菌体を調味料とする方法はなかった。本発明の課題は酵母菌体を破砕したものをそのまま調味料とする方法を提供するものである。

【０００５】

【課題を解決するための手段】本発明者は、上記課題を解決するために検討を行ったところ、酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕したところ、酵母菌体の品温を酵母菌体に含まれる重要な酵素並びに蛋白質を変性することなく、酵母菌体の細胞膜、細胞壁を充分に破砕し自己消化作用を効率良く行うことを見出した。更に、同処理により破砕された酵母菌体はそのまま自己消化処理、化学的抽出処理を施すことなく、蛋白質、核酸、ミネラル、糖、脂質等の呈味性成分並びに栄養素が完全に保持される調味料として使用できることを見出した。

【０００６】請求項１の発明は、酵母菌体の品温を10℃を越えない温度に保ちながら高圧噴射衝撃式ホモゲナイザーにより破砕し、自己消化することを特徴とする調味料の製造法である。請求項２の発明は、酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕し、熱水抽出し、後に微粒化できなかった酵母細胞壁を遠心分離することを特徴とする調味料の製造法である。

【０００７】

【発明の実施の形態】本発明の原料となる酵母菌体は、サッカロマイセス（Saccharomyces）属例えば、サッカロマイセス・セルビシエ（Saccharomyces cerevisiae）、ピキア（Pichia）属、ハンセヌラ（Hansenula）属等に属する酵母が挙げられる。これらの酵母菌体を本発

明の方法に使用するには、これらの酵母菌体を１～30ｗ/ｗ%、好ましくは５～20ｗ/ｗ%の濃度で水に懸濁させる。

【０００８】請求項１の発明においては、一部が生菌体である酵母の上記懸濁液を高圧噴射衝撃式ホモゲナイザーで酵母菌体から酵母細胞壁を分離する目的で連続破砕処理する。その際、高圧処理に伴う温度上昇によって酵母成分が変性しないように、酵母菌体を破砕する前後で、破砕装置の冷却機構を利用して、酵母菌体を含む懸濁液の品温を10℃を越えない温度に保持する。高圧噴射衝撃式ホモゲナイザーは、高い圧力を負荷した菌体を含む流束が高圧下で高速で衝突後、圧を解放することにより効率よく菌体の破砕、分散を行う機器であり、酵母菌体を破砕する際に負荷する圧力は500～3000kgf/cm²、好ましくは1000～2000kgf/cm²で破砕する。ホモゲナイザーについては、酵母を破砕するに充分な高い圧力の負荷と解放を行える湿式の破砕機であれば、特に種類は限定しない。

【０００９】以上のように、破砕された酵母菌体は通常使用されている自己消化法を適用して酵母エキスを得る。例えば、酵母菌体破砕物を１～20ｗ/ｗ%に調製し、のち45～60℃で５～24時間放置して自己消化させる。得られた生成物を遠心分離して酵母細胞壁を除去し酵母エキスとする。なお、必要に応じて、細胞壁溶解酵素、蛋白分解酵素、リボ核酸分解酵素を添加してもよい。このようにして得られた酵母エキスは従来法の自己消化法のみで得られた酵母エキスに比べて、エキス化率が10～20%高いことにより収率が約２割以上向上する。このようにして得られた酵母エキスは、従来の酵母エキスと同程度の呈味性を有し、これをペースト、粉末、顆粒、液状等の通常の商品形態に調製して調味料とすることができる。

【００１０】請求項２の発明においては、酵母菌体の懸濁液を高圧噴射衝撃式ホモゲナイザーで連続破砕処理を１～10回繰返し行い、酵母菌体から酵母細胞壁を分離して、更に酵母細胞壁を微粒化する、この処理により、酵母細胞壁の粒度分布はメジアン粒径２μmまで細粒化することができる。メジアン粒径は、試料の粒度分布測定において、粒径の大きさ順に並べた時に中央の順位の値である。なお、ホモゲナイザーの機器、破砕条件としては、上記請求項１の場合と同様である。

【００１１】以上のように、破砕した後、酵母成分の抽出促進と酵母菌体の含有物である蛋白分解酵素を失活する目的で、熱水で例えば60～90℃、１～30分抽出を行う。熱水抽出後、微粒化できなかった細胞壁を遠心分離（8000xg、20分）を行い、粒径0.8μmのメンブランフィルターで沪過し、フィルターを通過する微粒化された酵母菌体を含む清澄な液を得る。酵母菌体破砕物液は、清澄で３ヶ月保存後も沈澱物を生じない。また、酵母菌体破砕物には、メジアン粒径２～８μmにまで微粒化された酵母細胞壁成分を含み、酵母菌体に含有される成分は変性されていない。このようにして得られた酵母菌体破砕物液はそのまま、またはこの乾燥品を調味料として使用することができる。この製品は現在広く使用されている酵母エキスの成分に加えて、酵母細胞壁の構成成分であるグルカン、マンナンの糖、蛋白質、栄養分を含んでおり、従来の酵母エキスとは違う調味料である。酵母細胞壁は、不溶性であることから酵母エキスの製造時に分離、除去されて有効に利用されていない。しかし、本発明により酵母菌体を微細に破砕することにより懸濁液が清澄となり、酵母細胞壁を含んだ酵母菌体成分を悉く含有する新規な調味料が得られる。

【００１２】次に本発明の請求項１の発明の実施例を実施例１とし、請求項２の発明の実施例を実施例２として下記に記載し、併せて、その成分の分析結果を記載する。

【実施例１】17%濃度に調製したビール酵母（Saccharomyces cerevisiae）水懸濁液を高圧噴射衝撃式ホモゲナイザー（AQUA-300 アクアテック社）によって、1000kgf/cm²の圧力で１回処理した。なお、装置の冷却機構により破砕処理前後の酵母菌体を含んだ懸濁液の品温が10℃以下に保たれるように設定した。破砕後、50℃で一晩自己消化させて、遠心分離により酵母細胞壁を除去して本発明の製品を得た。なお、比較例として、酵母菌体を破砕しないで、上記実施例１と同様の条件で自己消化して比較製品を得た。この両者についてのエキス化率を測定した結果、本発明で得られた製品は74.2%、比較製品は60.1%であり、本発明製品が比較製品に比べて、収率が２割以上向上することが確認された。また、両者のエキス１リットルを粉末化した場合、本発明製品が80ｇであるに対し比較製品は66ｇと約２割多い回収量が得られた。

【００１３】実施例１で得られた本発明製品と比較製品との乾燥品について成分分析を行った結果を表１に示す。

【００１４】

【表１】

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分析項目	本発明製品	比較製品
乾燥減量%	3．57	3．32
全窒素%	10．7	11．6
灰　分　%	15．9	14．1
全　糖　%	23．4	12．0

【００１５】以上の結果から、本発明製品は比較製品より約２割多い回収量が得られたにも拘わらず、全糖含量値が11.4%多く含まれており、全窒素、灰分についてはほぼ同じ含量であることが確認された。よって、同量の酵母から本発明製品は比較製品に比較して、より多くの糖、全窒素、灰分が回収されていることが確認された。

【００１６】本発明製品の官能検査の結果を比較製品と＊比較して行った。専門パネリスト５名を対象として、下記項目で官能検査を行った。官能評価としては、非常に弱く感じるを１、非常に強く感じるを７、普通を４として数値化した。その結果を表２に示す。

【００１７】

【表２】

	官能評価項目	本発明製品	比較製品
フレーバー	酵　母　臭	5．40	4．60
	酸分解臭	4．00	4．40
	黒　糖　臭	3．80	4．40
	ロースト臭	3．60	4．00
味	先　　味	4．60	4．40
	旨　　味	3．80	3．40
	コ　　ク	4．60	4．40
	複　雑　味	4．40	4．20
	後　　味	4．60	4．40
	苦　　味	4．60	4．40

【００１８】以上の官能検査の結果、本発明製品は比較製品に比べて酵母臭はやや強いものの、その他のフレーバー、味については、殆ど変わらない評価を得た。従って、本発明製品は前項の成分分析の結果で、全糖含量が11.4%高いにも拘わらず、比較製品と呈味性は殆ど同じであることが確認された。

【００１９】

【実施例２】６w/w%，12w/w%濃度に調製したビール酵母の水懸濁液を高圧噴射衝撃式破砕機（AQUA-300　※50※アクアテック社）によって、それぞれ1000，1400，1800 kgf/cm²の圧力で１～８回処理した。但し、６w/w%濃度は1000kgf/cm²のみ実施した。次に破砕処理した酵母液を沸騰浴中で30分熱水抽出後、遠心分離（8000xg、20分）し、φ0.8μmのフィルターで沪過して酵母菌体破砕物液を得た。得られた酵母菌体破砕物液は清澄であった。それぞれの酵母菌体破砕物液を３ヶ月保存後も、製造直後と同様に沈澱物を生ぜず清澄であった。

【００２０】処理前のビール酵母水懸濁液と実施例２で

得られた12W/W%調製酵母水懸濁液を1400kgf/cm²で８回処理した酵母菌体破砕物液の凍結乾燥品についての、電子顕微鏡写真を図１及び図２に示す。この図１の酵母菌体から、図２に示すように酵母細胞壁が破砕されていることが明瞭に確認された。なお、粒度分布の測定は、レーザ回析／散乱式粒度分布測定装置（ＬＡ910、堀場製作所製）を用いた結果、酵母菌体破砕物のメジアン粒径は２μmであった。

【００２１】

【発明の効果】本発明の請求項１の発明は、従来法で得

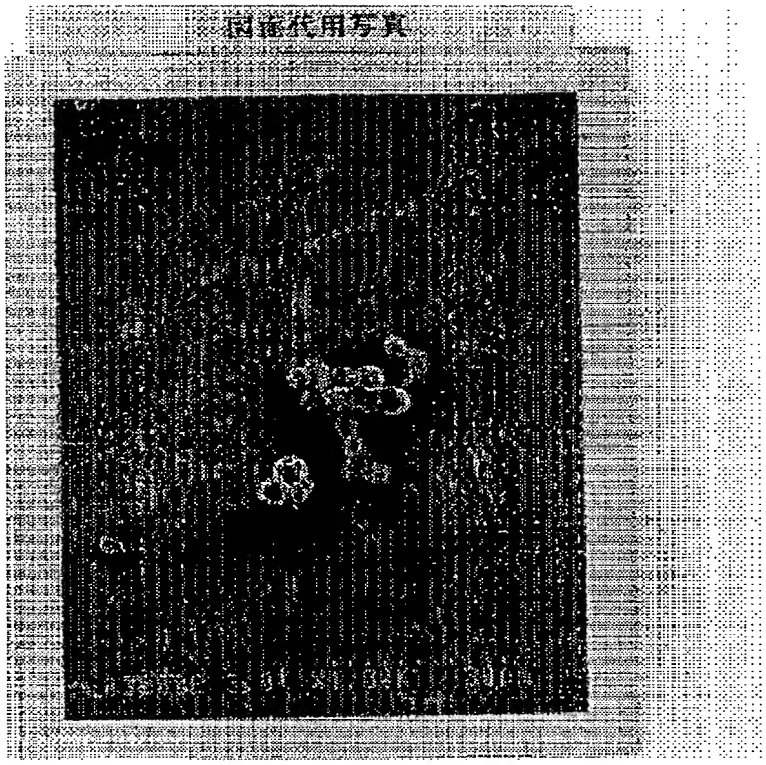
られた酵母エキスを２割以上高濃度に有する調味料を得ることができる。また、請求項２の発明は、酵母細胞壁を微細化することにより、酵母菌体が含有する有用成分を含んだ調味料を提供することができる工業的に有用な発明である。

【図面の簡単な説明】

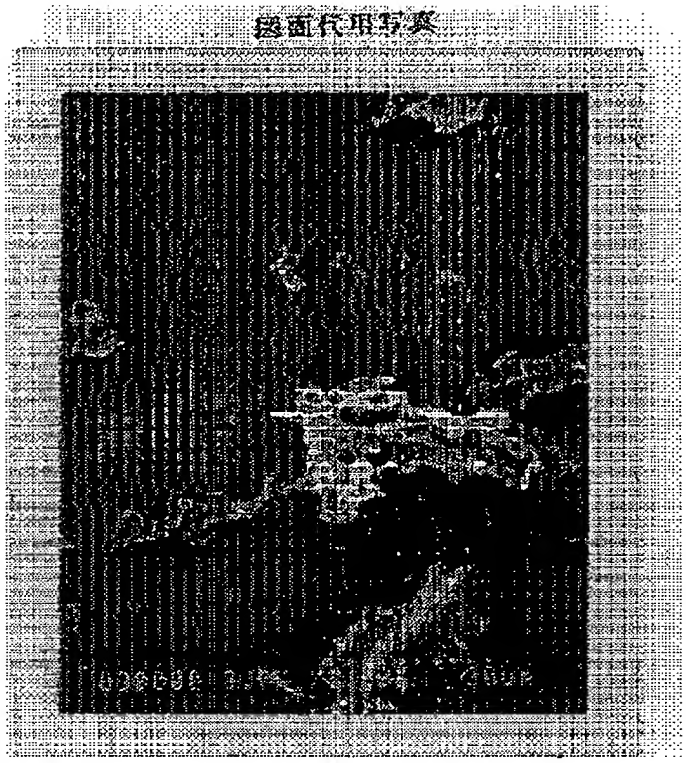
【図１】酵母菌体凍結乾燥物の形態を示す写真である。

【図２】図１の酵母菌体を本発明の方法により破砕処理した酵母菌体の凍結乾燥物の形態を示す写真である。

【図１】



【図2】



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(54)【発明の名称】　調味料の製造法

(57)【要約】

【課題】　本発明は酵母菌体から酵母エキスの含有量を多く含んだ酵母エキスよりなる調味料並びに酵母菌体の有効成分を悉く含有する調味料を提供する。

【解決手段】　酵母菌体の品温を10℃を越えない温度で高圧噴射衝撃式ホモゲナイザーにより破砕し、自己消化することを特徴とする調味料の製造法、並びに酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕し、熱水抽出し、後に微粒化できなかった酵母細胞壁を遠心分離することを特徴とする調味料の製造法。

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【特許請求の範囲】
【請求項１】　酵母菌体を品温を10℃を越えない温度に保ちながら高圧噴射衝撃式ホモゲナイザーにより破砕し、自己消化することを特徴とする調味料の製造法。
【請求項２】　酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕し、熱水抽出し、後に微粒化できなかった酵母細胞壁を遠心分離することを特徴とする調味料の製造法。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、酵母菌体の酵母エキスよりなる調味料及び酵母菌体の破砕物よりなる調味料を製造する方法に関する。
【０００２】
【従来の技術】酵母エキスは、肉エキス、野菜エキス、魚介類エキス等と共に化学調味料にない調味を示すものとして広く食品素材とすることは知られている。酵母エキスは酵母菌体を原料とし製造されている。酵母菌体はその外側を細胞壁で覆われているため、酵母エキスを製造する場合には、酵母細胞壁及び細胞膜を物理的に破砕する方法、或は酵母細胞壁及び細胞膜を細胞壁溶解酵素、蛋白質分解酵素、自己消化法等の酵素的に酵母菌体の細胞膜を化学的に変性し、酵母中の有用な蛋白質、核酸、ミネラル、糖、脂質等を含むエキスを、熱水抽出、食塩、塩化カリウム等の塩類、酸、アルカリ或はドデシル硫酸ナトリム等の界面活性剤、アルコール等で抽出する方法が知られている。そして、物理的に破砕する方法としては、例えば、微生物菌体を液体窒素等で凍結し、凍結状態で微生物菌体を破砕する方法（特公昭５８－８６９号公報）。ボールミル等の媒体ボールにより破砕する方法（特開平５－２５２８９４号公報）。高圧ホモゲナイザーで破砕する方法（特開昭４８－５８１６６号公報、特開昭５４－２８４６７号公報）、高圧ホモゲナイザーにより酵母の生細胞の50%以上を死滅させ、これを45～60℃の温度で自己消化させる酵母エキスの製造法（特公昭５０－２５５３９号公報）等が開示されている。
【０００３】更に、酵母細胞壁を高圧噴射衝撃式ホモゲナイザーで破砕し、この破砕液から種々の抽出処理を施して、酵母菌体中の特定成分を抽出分離する方法としては、高圧噴射衝撃式ホモゲナイザーで破砕し、塩類の水溶液又はアルカリ溶液で蛋白質を抽出する方法（特公昭５１－３９２４０号公報）。酵母菌体の細胞壁を破砕し、pH2～5、40℃以下の条件でグルタチオン含有液を抽出する方法（特公昭５７　４８２００号公報）。酵母菌体の細胞壁を高圧噴射衝撃式により破砕し、食塩を添加してpH6.5～8.5で加温抽出して脱核酵母及びリボ核酸を得る方法（特開昭５０－１３５２７４号公報）等が開示されている。
【０００４】

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【発明が解決しようとする課題】本発明は酵母菌体内に有する蛋白質、核酸、ミネラル、糖、脂質等の栄養素、呈味性の優れた各種成分を調味料として提供する課題について種々検討した。そして、従来食品素材として用いられている酵母エキスの製法において、酵母菌体をホモゲナイザーで破砕しこれを自己消化して酵母エキスを得る方法が酵母エキスの呈味的にも栄養的にも他の方式よりも優れた方法であることに着目し、この方式について研究を行った。この方式についての従来の方法は、上述の特公昭５０－２５５３９号公報の方法が開示されている。この従来の方法においては、酵母エキスの収率を高めるため、酵母菌体を圧力式ホモゲナイザーで３回処理を行った後、自己消化して酵母エキスを製造している。しかし、この方法ではホモゲナイザーの破砕能力が低いため、破砕処理を３回も行わなければならず、その結果高圧処理に伴う温度上昇により、自己消化に重要な酵素、蛋白質等が変性して従来の自己消化法で得られた酵母エキスとは呈味性が全く異なったものとなる。本発明は、破砕処理による温度の上昇を抑制して効率良く自己消化し呈味性が優れた調味料を収率よく製造する方法を提供するものである。また、従来は酵母菌体を破砕処理したものを自己消化又は化学的抽出処理を施すことなく、そのまま調味料とした酵母菌体を調味料とする方法はなかった。本発明の課題は酵母菌体を破砕したものをそのまま調味料とする方法を提供するものである。
【０００５】
【課題を解決するための手段】本発明者は、上記課題を解決するために検討を行ったところ、酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕したところ、酵母菌体の品温を酵母菌体に含まれる重要な酵素並びに蛋白質を変性することなく、酵母菌体の細胞膜、細胞壁を充分に破砕し自己消化作用を効率良く行うことを見出した。更に、同処理により破砕された酵母菌体はそのまま自己消化処理、化学的抽出処理を施すことなく、蛋白質、核酸、ミネラル、糖、脂質等の呈味性成分並びに栄養素が完全に保持される調味料として使用できることを見出した。
【０００６】請求項１の発明は、酵母菌体の品温を10℃を越えない温度に保ちながら高圧噴射衝撃式ホモゲナイザーにより破砕し、自己消化することを特徴とする調味料の製造法である。請求項２の発明は、酵母菌体を高圧噴射衝撃式ホモゲナイザーにより破砕し、熱水抽出し、後に微粒化できなかった酵母細胞壁を遠心分離することを特徴とする調味料の製造法である。
【０００７】
【発明の実施の形態】本発明の原料となる酵母菌体は、サッカロマイセス（Saccharomyces）属例えば、サッカロマイセス・セルビシエ（Saccharomyces cerevisiae）、ピキア（Pichia）属、ハンセヌラ（Hansenula）属等に属する酵母が挙げられる。これらの酵母菌体を本発

明の方法に使用するには、これらの酵母菌体を１～30ｗ/ｗ％、好ましくは５～20ｗ/ｗ％の濃度で水に懸濁させる。

【０００８】請求項１の発明においては、一部が生菌体である酵母の上記懸濁液を高圧噴射衝撃式ホモゲナイザーで酵母菌体から酵母細胞壁を分離する目的で連続破砕処理する。その際、高圧処理に伴う温度上昇によって酵母成分が変性しないように、酵母菌体を破砕する前後で、破砕装置の冷却機構を利用して、酵母菌体を含む懸濁液の品温を10℃を越えない温度に保持する。高圧噴射衝撃式ホモゲナイザーは、高い圧力を負荷した菌体を含む流束が高圧下で高速で衝突後、圧を解放することにより効率よく菌体の破砕、分散を行う機器であり、酵母菌体を破砕する際に負荷する圧力は500～3000kgf/cm²、好ましくは1000～2000kgf/cm²で破砕する。ホモゲナイザーについては、酵母を破砕するに充分な高い圧力の負荷と解放を行える湿式の破砕機であれば、特に種類は限定しない。

【０００９】以上のように、破砕された酵母菌体は通常使用されている自己消化法を適用して酵母エキスを得る。例えば、酵母菌体破砕物を１～20ｗ/ｗ％に調製し、のち45～60℃で５～24時間放置して自己消化させる。得られた生成物を遠心分離して酵母細胞壁を除去し酵母エキスとする。なお、必要に応じて、細胞壁溶解酵素、蛋白分解酵素、リボ核酸分解酵素を添加してもよい。このようにして得られた酵母エキスは従来法の自己消化法のみで得られた酵母エキスに比べて、エキス化率が10～20％高いことにより収率が約２割以上向上する。このようにして得られた酵母エキスは、従来の酵母エキスと同程度の呈味性を有し、これをペースト、粉末、顆粒、液状等の通常の商品形態に調製して調味料とすることができる。

【００１０】請求項２の発明においては、酵母菌体の懸濁液を高圧噴射衝撃式ホモゲナイザーで連続破砕処理を１～10回繰返し行い、酵母菌体から酵母細胞壁を分離して、更に酵母細胞壁を微粒化する、この処理により、酵母細胞壁の粒度分布はメジアン粒径２μmまで細粒化することができる。メジアン粒径は、試料の粒度分布測定において、粒径の大きさ順に並べた時に中央の順位の値である。なお、ホモゲナイザーの機器、破砕条件としては、上記請求項１の場合と同様である。

【００１１】以上のように、破砕した後、酵母成分の抽出促進と酵母菌体の含有物である蛋白分解酵素を失活する目的で、熱水で例えば60～90℃、１～30分抽出を行う。熱水抽出後、微粒化できなかった細胞壁を遠心分離（8000xg、20分）を行い、粒径0.8μmのメンブランフィルターで沪過し、フィルターを通過する微粒化された酵母菌体を含む清澄な液を得る。酵母菌体破砕物液は、清澄で３ヶ月保存後も沈澱物を生じない。また、酵母菌体破砕物には、メジアン粒径２～８μmにまで微粒化された酵母細胞壁成分を含み、酵母菌体に含有される成分は変性されていない。このようにして得られた酵母菌体破砕物液はそのまま、またはこの乾燥品を調味料として使用することができる。この製品は現在広く使用されている酵母エキスの成分に加えて、酵母細胞壁の構成成分であるグルカン、マンナンの糖、蛋白質、栄養分を含んでおり、従来の酵母エキスとは違う調味料である。酵母細胞壁は、不溶性であることから酵母エキスの製造時に分離、除去されて有効に利用されていない。しかし、本発明により酵母菌体を微細に破砕することにより懸濁液が清澄となり、酵母細胞壁を含んだ酵母菌体成分を悉く含有する新規な調味料が得られる。

【００１２】次に本発明の請求項１の発明の実施例を実施例１とし、請求項２の発明の実施例を実施例２として下記に記載し、併せて、その成分の分析結果を記載する。

【実施例１】17％濃度に調製したビール酵母（Saccharomyces cerevisiae）水懸濁液を高圧噴射衝撃式ホモゲナイザー（AQUA-300 アクアテック社）によって、1000kgf/cm²の圧力で１回処理した。なお、装置の冷却機構により破砕処理前後の酵母菌体を含んだ懸濁液の品温が10℃以下に保たれるように設定した。破砕後、50℃で一晩自己消化させて、遠心分離により酵母細胞壁を除去して本発明の製品を得た。なお、比較例として、酵母菌体を破砕しないで、上記実施例１と同様の条件で自己消化して比較製品を得た。この両者についてのエキス化率を測定した結果、本発明で得られた製品は71.2％、比較製品は60.1％であり、本発明製品が比較製品に比べて、収率が２割以上向上することが確認された。また、両者のエキス１リットルを粉末化した場合、本発明製品が80ｇであるに対し比較製品は66ｇと約２割多い回収量が得られた。

【００１３】実施例１で得られた本発明製品と比較製品との乾燥品について成分分析を行った結果を表１に示す。

【００１４】

【表１】

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分析項目	本発明製品	比較製品
乾燥減量%	3．57	3．32
全窒素%	10．7	11．6
灰　分　%	15．9	14．1
全　糖　%	23．4	12．0

【００１５】以上の結果から、本発明製品は比較製品より約２割多い回収量が得られたにも拘わらず、全糖含量値が11.4%多く含まれており、全窒素、灰分についてはほぼ同じ含量であることが確認された。よって、同量の酵母から本発明製品は比較製品に比較して、より多くの糖、全窒素、灰分が回収されていることが確認された。

【００１６】本発明製品の官能検査の結果を比較製品と＊比較して行った。専門パネリスト５名を対象として、下記項目で官能検査を行った。官能評価としては、非常に弱く感じるを１、非常に強く感じるを７、普通を４として数値化した。その結果を表２に示す。

【００１７】

【表２】

	官能評価項目	本発明製品	比較製品
フレーバー	酵母臭	5．40	4．60
	酸分解臭	4．00	4．40
	黒糖臭	3．80	4．40
	ロースト臭	3．60	4．00
味	先　味	4．60	4．40
	旨　味	3．80	3．40
	コ　ク	4．60	4．40
	複雑味	4．40	4．20
	後　味	4．60	4．40
	苦　味	4．60	4．40

【００１８】以上の官能検査の結果、本発明製品は比較製品に比べて酵母臭はやや強いものの、その他のフレーバー、味については、殆ど変わらない評価を得た。従って、本発明製品は前項の成分分析の結果で、全糖含量が11.4%高いにも拘わらず、比較製品と呈味性は殆ど同じであることが確認された。

【００１９】

【実施例２】６w/w%，12w/w%濃度に調製したビール酵母の水懸濁液を高圧噴射衝撃式破砕機（AQUA-300　※50※アクアテック社）によって、それぞれ1000，1400，1800 kgf/cm²の圧力で１～８回処理した。但し、６w/w%濃度は1000kgf/cm²のみ実施した。次に破砕処理した酵母液を沸騰浴中で30分熱水抽出後、遠心分離（8000xg、20分）し、φ0.8μmのフィルターで沪過して酵母菌体破砕物液を得た。得られた酵母菌体破砕物液は清澄であった。それぞれの酵母菌体破砕物液を３ヶ月保存後も、製造直後と同様に沈澱物を生ぜず清澄であった。

【００２０】処理前のビール酵母水懸濁液と実施例２で

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得られた12W/W%調製酵母水懸濁液を1400kgf/cm²で８回処理した酵母菌体破砕物液の凍結乾燥品についての、電子顕微鏡写真を図１及び図２に示す。この図１の酵母菌体から、図２に示すように酵母細胞壁が破砕されていることが明瞭に確認された。なお、粒度分布の測定は、レーザ回析／散乱式粒度分布測定装置（ＬＡ910、堀場製作所製）を用いた結果、酵母菌体破砕物のメジアン粒径は２μmであった。

【００２１】

【発明の効果】本発明の請求項１の発明は、従来法で得

8

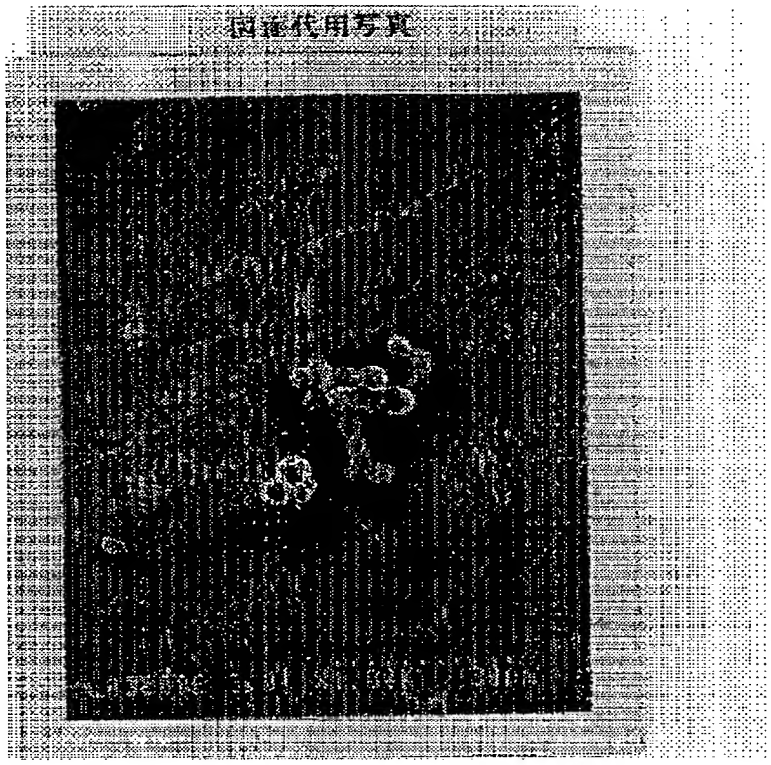
られた酵母エキスを２割以上高濃度に有する調味料を得ることができる。また、請求項２の発明は、酵母細胞壁を微細化することにより、酵母菌体が含有する有用成分を含んだ調味料を提供することができる工業的に有用な発明である。

【図面の簡単な説明】

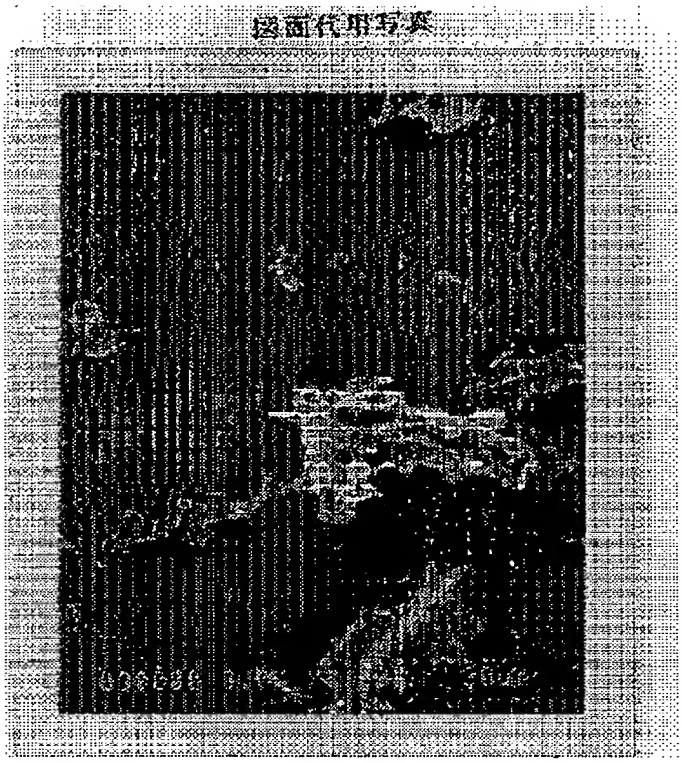
【図１】酵母菌体凍結乾燥物の形態を示す写真である。

【図２】図１の酵母菌体を本発明の方法により破砕処理した酵母菌体の凍結乾燥物の形態を示す写真である。

【図１】



【図2】



09/514,949

=> s yeast? or candida or torula or saccharomyces

L1 496297 YEAST? OR CANDIDA OR TORULA OR SACCHAROMYCES

=> s polyamine? or putrescine or spermidine or spermine

L2 116047 POLYAMINE? OR PUTRESCINE OR SPERMIDINE OR SPERMINE

=> s l1 and l2

L3 3539 L1 AND L2

=> s nuclease or polynuclease

L4 54999 NUCLEASE OR POLYNUCLEASE

=> s nuclease? or polynuclease?

L5 63893 NUCLEASE? OR POLYNUCLEASE?

=> s ribonuclease? or deoxiribonuclease?

L6 41239 RIBONUCLEASE? OR DEOXIRIBONUCLEASE?

=> s l5 or l6

L7 99980 L5 OR L6

=> s l3 and l7

L8 812 L3 AND L7

=> d his

(FILE 'HOME' ENTERED AT 14:33:03 ON 08 SEP 2000)

FILE 'CAPLUS, BIOSIS, MEDLINE, AGRICOLA, USPATFULL, WPIDS' ENTERED AT
14:33:39 ON 08 SEP 2000
L1 496297 S YEAST? OR CANDIDA OR TORULA OR SACCHAROMYCES
L2 116047 S POLYAMINE? OR PUTRESCINE OR SPERMIDINE OR SPERMINE
L3 3539 S L1 AND L2
L4 54999 S NUCLEASE OR POLYNUCLEASE
L5 63893 S NUCLEASE? OR POLYNUCLEASE?
L6 41239 S RIBONUCLEASE? OR DEOXIRIBONUCLEASE?
L7 99980 S L5 OR L6
L8 812 S L3 AND L7

=> s l1 (L) l2 (L) l3

(FILE 'HOME' ENTERED AT 14:33:03 ON 08 SEP 2000)

FILE 'CAPLUS, BIOSIS, MEDLINE, AGRICOLA, USPATFULL, WPIDS' ENTERED AT
14:33:39 ON 08 SEP 2000
L1 496297 S YEAST? OR CANDIDA OR TORULA OR SACCHAROMYCES
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L6 41239 S RIBONUCLEASE? OR DEOXIRIBONUCLEASE?
L7 99980 S L5 OR L6
L8 812 S L3 AND L7
L9 3146 S L1 (L) L2 (L) L3
L10 766 S L1 (L) L2 (L) L8
L11 725 S L1 (L) L2 (L) L7

=> s extract?

L12 1271062 EXTRACT?

=> s l11 (L) l11

L13 725 L11 (L) L11

=> s l11 (L) l12

L14 611 L11 (L) L12

=> dup rem l4

54999 ANSWERS REQUESTED EXCEEDS MAXIMUM ALLOWED OF 50000
You may process up to 50,000 answers per command. Please try to narrow your search until your resulting L# answer set is within the maximum number of answers.

=> dup rem l14
<------User Break------>
u
=> s l1 (p) l2 () l7
<------User Break------>
u
SEARCH ENDED BY USER

=> s l1 (p) l2 (p) l7

L15 61 L1 (P) L2 (P) L7

=> s l15 p l12

MISSING OPERATOR L15 P L12
The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s l15 (p) l12

L16 8 L15 (P) L12

=> dup rem l16

PROCESSING COMPLETED FOR L16
L17 6 DUP REM L16 (2 DUPLICATES REMOVED)

=> d ab bib tot

L17 ANSWER 1 OF 6 USPATFULL
AB The instant invention provides for monoclonal antibody 369.2B which is specific for the .beta.A4 peptide, and in particular the free C-terminus of .beta.A4 "1-42" but not "1-43", and stains diffuse and fibrillar amyloid, vascular amyloid, and neurofibrillary tangles. The instant invention further provides for antibody fragments and constructs thereof which have the same binding specificity. The instant invention also provides for methods of diagnosis, screening and therapeutics for treating unique forms of .beta.A4 peptide, using the antibodies of the instant invention.
AN 97:112579 USPATFULL
TI Method of isolating .beta.A4 peptide species ending at carboxy-terminals residue 42 using monoclonal antibody 369.2B
IN Konig, Gerhard, Branford, CT, United States
Graham, Paul, New Haven, CT, United States
PA Bayer Corporation, West Haven, CT, United States (U.S. corporation)
PI US 5693753 19971202
AI US 1995-472627 19950607 (8)
RLI Division of Ser. No. US 1995-388463, filed on 14 Feb 1995
DT Utility
EXNAM Primary Examiner: Allen, Marianne P.; Assistant Examiner: Duffy, Patricia A.
LREP McDonnell Boehnen Hulbert & Berghoff
CLMN Number of Claims: 1
ECL Exemplary Claim: 1
DRWN 12 Drawing Figure(s); 10 Drawing Page(s)
LN.CNT 924
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L17 ANSWER 2 OF 6 BIOSIS COPYRIGHT 2000 BIOSIS DUPLICATE 1
AB Azotobacter vinelandii NMN glycohydrolase [EC 3.2.2.14] has been shown to
require absolutely GTP or a high-molecular-weight and heat-stable component for its function. The intracellular activator could be purified from its sonicate by heat treatment, acetone precipitation, phenol ◇extraction◇, and acid precipitation in a good yield. The purified activator showed high affinity and effectiveness for NMN glycohydrolase (KA = 0.012 optical density unit at 257 nm/ml; Vmax standardized by the activity at 1 mM GTP = 88%). Negative cooperativity of the enzyme activation with the activator was also shown. On treatment with either micrococcal ◇nuclease◇ or pancreatic RNase, the activator activity was completely abolisehd, whereas pronase and trypsin had no effect. The activator could be replaced by ◇yeast◇ RNA as well as calf liver RNA, whereas DNAs purified from Micrococcus lysodeikticus, T 7 and calf thymus had no effect on the enzyme. Furthermore, poly(G) and poly(I) could function as activators with the same effectiveness as the purified activator, and the enzyme activation with these RNA homopolymers was inhibited by poly(C), suggesting that the activation mechanism is specific with respect to base composition. Based on a kinetic analysis of the enzyme activation with commercial RNAs, together with the results from enzymatic digestion, specific inhibition of the enzyme by ◇spermine◇, and its chemical properties, the activator was identified as an RNA. A model is described for NMN glycohydrolase regulation in which the RNA activator plays an important role in the NMN salvage cycles.
AN 1987:255494 BIOSIS
DN BA84:8466
TI ISOLATION AND CHARACTERIZATION OF AN ACTIVATOR FOR AZOTOBACTER-VINELANDII
NICOTINAMIDE MONONUCLEOTIDE GLYCOHYDROLASE.
AU IMAI T
CS DEP. CHEM., COLL. GEN. EDUC., NAGOYA UNIV., CHIKUSA-KU, NAGOYA, AICHI 464,
JPN.
SO J BIOCHEM (TOKYO), (1987) 101 (1), 153-162.
CODEN: JOBIAO. ISSN: 0021-924X.

FS BA; OLD
LA English

L17 ANSWER 3 OF 6 BIOSIS COPYRIGHT 2000 BIOSIS
AB Two glycoproteidic acid RNases (RNase I and RNase II) were obtained and purified from the seeds of Dactylis glomerata by ◇extraction◇ with acetate buffer, fractionation with ammonium sulfate, ion-exchange chromatography on DEAE-cellulose, DEAE-Sphadex, affinity chromatography on Con A-Sepharose and gel filtration on Bio-Gel P60. RNase I with a specific activity of 2582 U .cntdot. mg-1 protein and an optimum pH of 4.9 and RNase II with a specific activity of 1928 U .cntdot. mg-1 protein and optimum pH of 4.6, were isolated. They lacked ◇nuclease◇, phosphodi- and monoesterase activities. Both forms of the enzyme hydrolyzed pyrimidine homopolymers with a preference for poly U and exhibited a low specificity for purine homopolymers (poly G and poly A). RNase I acted with a 3-fold higher hydrolytic activity on poly C homopolymer than RNase II. The hydrolytic activity of both enzymes was inhibited by Zn2+, Fe2+, Cu2+ ions when ◇yeast◇ RNA was the substrate. The amines ◇spermine◇, ◇spermidine◇ and tyramine at a concentration of 0.1 mM increased the enzymatic activity of both RNases by 20 to 60% of the relative activity. The hydrolytic activity of RNases I and II was stimulated by the presence of lentil lectin (LL) soybean lectin (SBA) and potato lectin (STA), and inhibited by the presence of concanavalin A. The 20-200% stimulation and 40-60% inhibition depended on the proportion, on a weight basis, of enzyme to lectin and were reversible in the presence of receptor sugars.
AN 1986:204727 BIOSIS
DN BA81:96027
TI TWO ACID RNASE SPECIES FROM DACTYLIS-GLOMERATA SEEDS PURIFICATION PROPERTIES AND EFFECT OF POLYAMINES AND LECTINS ON THEIR ACTIVITY.
AU WISNIOWSKA J; MORAWIECKA B
CS INST. BIOCHEM., UNIV. WROCLAW, TAMKA 2, 50-137 WROCLAW, POLAND.
SO ACTA SOC BOT POL, (1985 (RECD 1986)) 54 (3), 241-254.
CODEN: ASBNA2. ISSN: 0001-6977.
FS BA; OLD
LA English

L17 ANSWER 4 OF 6 BIOSIS COPYRIGHT 2000 BIOSIS DUPLICATE 2
AB The alkaline ◇nuclease◇ (pH optimum 9.0) was purified about 500-fold in 25% yield from the ◇extract◇ of rat liver mitochondria. The enzyme cleaves ◇yeast◇ RNA, poly(U),poly(C) and denaturated DNA to yield oligonucleotides with 5'-phosphoryl and 3'-hydroxyl ends. The enzyme has a MW of about 60,000, a sedimentation coefficient of 4 S and an isoelectric point of 9.0. The behaviors of RNase activity of the ◇nuclease◇ are identical with those of DNase activity in column chromatography and in catalytic nature. The affinities of RNase activity for substrate, Mg2+, ◇spermidine◇ and polyvinyl sulfate are lower than those of DNase activity. The alkaline ◇nuclease◇ activity measured in the homogenate of regenerating rat liver is not significantly changed.
AN 1980:161701 BIOSIS
DN BA69:36697
TI CHARACTERIZATION OF ALKALINE NUCLEASE FROM RAT LIVER MITOCHONDRIA.
AU TAMURA S; TERAOKA H; TSUKADA K
CS DEP. PATHOL. BIOCHEM., MED. RES. INST., TOKYO MED. DENT. UNIV., KANDA-SURUGADAI, CHIYODA, TOKYO 101, JPN.
SO BIOCHIM BIOPHYS ACTA, (1979) 564 (3), 526-533.
CODEN: BBACAQ. ISSN: 0006-3002.
FS BA; OLD
LA English

L17 ANSWER 5 OF 6 BIOSIS COPYRIGHT 2000 BIOSIS
AB Autodegradation of ◇yeast◇ [◇Saccharomyces◇ cerevisae] ribosomes is due to a latent RNAase which is associated with the 40 S ribosomal subunit. The ◇ribonuclease◇ was ◇extracted◇ in the presence of EDTA from ribosomes and purified 118-fold by protamine sulfate precipitation, (NH4)SO4 fractionation and chromatography on DEAE-cellulose. The optimum pH for this enzyme is 5-6.5, while the optimum temperature is 45.degree.-50.degree. C. Incubation for 10 min at 60.degree. C caused a reduction in enzyme activity of 70%. The RNase has an endonucleolytic activity against rRNA, tRNA, poly(A), poly(U) and poly(C) but does not degrade poly(G) or DNA. It hydrolyzes the homopolymers to nucleoside 3'-phosphates. Zn2+, Mn2+, heparin, glutathione and p-chloromercuribenzoate inhibit the RNase, while Na+, K+, EDTA and ◇spermidine◇ have little or no effect. It binds tightly to ◇yeast◇ ribosomes but only loosely to RNase-free wheat germ ribosomes. Polyribosomes possess less autodegradation activity than monoribosomes isolated from the same homogenate.
AN 1980:178471 BIOSIS
DN BA69:53467
TI A RNASE FROM YEAST ASSOCIATED WITH THE 40S RIBOSOMAL SUBUNIT.
AU SCHULZ-HARDER B; KAEUFER N; SWIDA U
CS NATL. INST. MED. RES., RIDGEWAY, MILL HILL, LONDON NW7 1AA, ENGL., UK.
SO BIOCHIM BIOPHYS ACTA, (1979) 565 (1), 173-182.
CODEN: BBACAQ. ISSN: 0006-3002.
FS BA; OLD
LA English

L17 ANSWER 6 OF 6 MEDLINE
AB ◇Ribonuclease◇ activity has been ◇extracted◇ from adult guinea-pig epidermis by sequential homogenization in dilute sodium acetate and sulfuric acid. The ◇extracts◇ were subjected to ammonium sulfate fractionation and to affinity and ion exchange chromatography. Three ◇ribonucleases◇ (I, II, III) were separated from the sodium acetate ◇extract◇ and 6(A, B1, B2, B3, C, D) were isolated from the sulfuric acid ◇extract◇. The degree of purification varies from 65-fold to 8,700-fold and the apparent molecular weights of the active forms of 8 of the 9 ◇ribonucleases◇ range from 10,000 to 36,500. No phosphodiesterase activity is present in any of the 9 fractions, but there is alkaline phosphatase activity in one (I) and deoxyribonuclease activity in a second (B3). Two of the ◇ribonucleases◇ have acid pH optima (a1, B3), while the others are most active between PHs 6.8 and 7.8. The activity of 4 of the fractions is sensitive to added EDTA (III, A, B2, B3,), but no stimulatory metal ions were found. Low concentrations of the ◇polyamine◇ ◇spermidine◇ enhanced the activity of 3-fractions (III, C, D). ◇Yeast◇ ribonucleic acid is degraded exonucleolytically by 2 fractions (I, A) and endonucleolytically by the remaining 7. In experiments with homopolyribonucleotide substrates, poly U was generally the preferred substrate. Substantial hydrolysis of poly A occurred with 2 fractions (A, B3) and slight hydrolysis of poly G with 2 other fractions (B2, C).
AN 77166629 MEDLINE
DN 77166629
TI Epidermal nucleases. II. The multiplicity of ribonucleases in guinea-pig epidermis.
AU Melbye S W; Freedberg I M
SO JOURNAL OF INVESTIGATIVE DERMATOLOGY, (1977 May) 68 (5) 285-92.
Journal code: IHZ. ISSN: 0022-202X.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Abridged Index Medicus Journals; Priority Journals
EM 197708

=> d his

(FILE 'HOME' ENTERED AT 14:33:03 ON 08 SEP 2000)

FILE 'CAPLUS, BIOSIS, MEDLINE, AGRICOLA, USPATFULL, WPIDS' ENTERED AT 14:33:39 ON 08 SEP 2000
L1 496297 S YEAST? OR CANDIDA OR TORULA OR SACCHAROMYCES
L2 116047 S POLYAMINE? OR PUTRESCINE OR SPERMIDINE OR SPERMINE
L3 3539 S L1 AND L2
L4 54999 S NUCLEASE OR POLYNUCLEASE
L5 63893 S NUCLEASE? OR POLYNUCLEASE?
L6 41239 S RIBONUCLEASE? OR DEOXIRIBONUCLEASE?
L7 99980 S L5 OR L6
L8 812 S L3 AND L7
L9 3146 S L1 (L) L2 (L) L3
L10 766 S L1 (L) L2 (L) L8
L11 725 S L1 (L) L2 (L) L7
L12 1271062 S EXTRACT?
L13 725 S L11 (L) L11
L14 611 S L11 (L) L12
L15 61 S L1 (P) L2 (P) L7
L16 8 S L15 (P) L12
L17 6 DUP REM L16 (2 DUPLICATES REMOVED)

=> s l1 (25a) l2

L18 741 L1 (25A) L2

=> d ti 700-end

'ACC' IS NOT VALID WITH MULTIFILE PROCESSING

DISPLAY ACC is not allowed in a multifile environment. Enter "DISPLAY HISTORY" to locate the file the L# was created in, use the FILE command to enter that file, and re-enter the DISPLAY ACC command.

=> dup rem l18

<------User Break------>
u
=> s l1 (15a) l2

L18 L19 623 L1 (15A) L2

=> s candida or torula or saccharomyces or brewer?

L20 299598 CANDIDA OR TORULA OR SACCHAROMYCES OR BREWER?

=> s l1 (25) l2

MISSING OPERATOR 'L7 (25'
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l1 (25a) l2

L21 741 L1 (25A) L2

=> s l1 (25a) l20

L22 95414 L1 (25A) L20

=> s l2 (25a) l20

L23 328 L2 (25A) L20

=> autolys? or autolys?

AUTOLYS? IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s autolys? or autolys?

L24 13117 AUTOLYS? OR AUTOLYS?

=> s l23 (25a) l24

L25 0 L23 (25A) L24

=> d his

(FILE 'HOME' ENTERED AT 14:33:03 ON 08 SEP 2000)

FILE 'CAPLUS, BIOSIS, MEDLINE, AGRICOLA, USPATFULL, WPIDS' ENTERED AT
14:33:39 ON 08 SEP 2000
L1 496297 S YEAST? OR CANDIDA OR TORULA OR SACCHAROMYCES
L2 116047 S POLYAMINE? OR PUTRESCINE OR SPERMIDINE OR SPERMINE
L3 3539 S L1 AND L2
L4 54999 S NUCLEASE OR POLYNUCLEASE
L5 63893 S NUCLEASE? OR POLYNUCLEASE?
L6 41239 S RIBONUCLEASE? OR DEOXIRIBONUCLEASE?
L7 99980 S L5 OR L6
L8 812 S L3 AND L7
L9 3146 S L1 (L) L2 (L) L3
L10 766 S L1 (L) L2 (L) L8
L11 725 S L1 (L) L2 (L) L7
L12 1271082 S EXTRACT?
L13 725 S L11 (L) L11
L14 611 S L11 (L) L12
L15 61 S L1 (P) L2 (P) L7
L16 8 S L15 (P) L12
L17 6 DUP REM L16 (2 DUPLICATES REMOVED)
L18 741 S L1 (25A) L2
L19 623 S L1 (15A) L2
L20 299598 S CANDIDA OR TORULA OR SACCHAROMYCES OR BREWER?
L21 741 S L1 (25A) L2
L22 95414 S L1 (25A) L20
L23 328 S L2 (25A) L20
L24 13117 S AUTOLYS? OR AUTOLYS?
L25 0 S L23 (25A) L24

=> s l1s l15 (P) l24

MISSING OPERATOR L1S L15
The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> s l15 (P) l24

L26 0 L15 (P) L24

=> s l8 and l24

L27 3 L8 AND L24

=> dup rem l27

PROCESSING COMPLETED FOR L27
L28 3 DUP REM L27 (0 DUPLICATES REMOVED)

=> d ab bib 1-3

L28 ANSWER 1 OF 3 USPATFULL
AB A method for producing genetically transformed plants exhibiting toxicity to Coleopteran insects is disclosed. In another aspect, the present invention embraces chimeric plant genes, genetically transformed cells and differentiated plants which exhibit toxicity to Coleopteran insects. In yet another aspect, the present invention embraces bacterial cells and plant transformation vectors comprising a chimeric plant gene encoding a Coleopteran toxin protein of Bacillus thuringiensis.
AN 1998:65030 USPATFULL
TI Insect resistant plants
IN Fischhoff, David A., Webster Groves, MO, United States
Fuchs, Roy L., St. Charles, MO, United States
Lavrik, Paul B., Kirkwood, MO, United States
McPherson, Sylvia A., Birmingham, AL, United States
Perlak, Frederick J., St. Louis, MO, United States
PA Monsanto Company, St. Louis, MO, United States (U.S. corporation)
PI US 5763241 19980609
AI US 1996-759446 19961205 (8)
RLI Continuation of Ser. No. US 1995-435101, filed on 4 May 1995, now abandoned which is a division of Ser. No. US 1993-72281, filed on 4 Jun 1993, now patented, Pat. No. US 5495071 which is a continuation of Ser. No. US 1990-523284, filed on 14 May 1990, now abandoned which is a continuation of Ser. No. US 1987-44081, filed on 29 Apr 1987, now abandoned
DT Utility
EXNAM Primary Examiner: Fox, David T.; Assistant Examiner: Nelson, Amy J.
LREP Arnold, Whiute & Durkee
CLMN Number of Claims: 14
ECL Exemplary Claim: 1
DRWN 33 Drawing Figure(s); 33 Drawing Page(s)
LN.CNT 1819
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L28 ANSWER 2 OF 3 USPATFULL
AB A desired non-human animal or an animal cell or human cell which contains a predefined, specific and desired alteration in at least one of its two p53 chromosomal alleles, such that at least one of these alleles contains a mutation which alters the expression of the allele, and the other of the alleles expresses either a normal p53 gene product, or comprises an identical or different p53 mutation.
AN 96:99375 USPATFULL
TI Transgenic mice containing a disrupted p53 gene
IN Donehower, Lawrence A., Houston, TX, United States
Bradley, Allan, Houston, TX, United States
Butel, Janet S., Houston, TX, United States
Slagle, Betty, Bellaire, TX, United States
PA Baylor College of Medicine, Houston, TX, United States (U.S. corporation)
PI US 5569824 19961029
AI US 1994-278588 19940721 (8)
RLI Continuation of Ser. No. US 1992-816740, filed on 3 Jan 1992, now abandoned which is a continuation-in-part of Ser. No. US 1991-637563, filed on 4 Jan 1991, now abandoned
DT Utility
EXNAM Primary Examiner: Stone, Jacqueline M.; Assistant Examiner: Crouch, Deborah
LREP Burns, Doane, Swecker & Mathis
CLMN Number of Claims: 4
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 5 Drawing Page(s)
LN.CNT 2620
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L28 ANSWER 3 OF 3 USPATFULL
AB A method for producing genetically transformed plants exhibiting toxicity to Coleopteran insects is disclosed. In another aspect, the present invention embraces chimeric plant genes, genetically transformed cells and differentiated plants which exhibit toxicity to Coleopteran insects. In yet another aspect, the present invention embraces bacterial cells and plant transformation vectors comprising a chimeric plant gene encoding a Coleopteran toxin protein of Bacillus thuringiensis.
AN 96:17143 USPATFULL
TI Insect resistant tomato and potato plants
IN Fischhoff, David A., Webster Groves, MO, United States
Fuchs, Roy L., Ballwin, MO, United States
Lavrik, Paul B., Kirkwood, MO, United States
McPherson, Sylvia A., St. Louis, MO, United States
Perlak, Frederick J., St. Louis, MO, United States
PA Monsanto Company, St. Louis, MO, United States (U.S. corporation)
PI US 5495071 19960227
AI US 1993-72281 19930604 (8)
RLI Continuation of Ser. No. US 1990-523284, filed on 14 May 1990, now abandoned which is a continuation of Ser. No. US 1987-44081, filed on 29 Apr 1987, now abandoned
DT Utility
EXNAM Primary Examiner: Chereskin, Che S.
LREP Shear, Richard H.; Hoerner, Jr., Dennis R.; Lavin, Jr., Lawrence M.
CLMN Number of Claims: 20
ECL Exemplary Claim: 18
DRWN 18 Drawing Figure(s); 33 Drawing Page(s)
LN.CNT 1824
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> s l8 and l24

L29 3 L8 AND L24

=> s l1 and l24

L30 2391 L1 AND L24

=> s l30 and l2

L31 22 L30 AND L2

=> dup rem l31

PROCESSING COMPLETED FOR L31
L32 22 DUP REM L31 (0 DUPLICATES REMOVED)

=> d ti tot

L32 ANSWER 1 OF 22 USPATFULL
TI Peptide expression and delivery system

L32 ANSWER 2 OF 22 USPATFULL
TI Antiparasitic agents

L32 ANSWER 3 OF 22 USPATFULL
TI Process for preparing nontoxic lipopolysaccharides from acidiphilium species

L32 ANSWER 4 OF 22 USPATFULL
TI Sorbitol kinase, process for producing the same, and substantially pure microorganism

L32 ANSWER 5 OF 22 USPATFULL
TI Antiparasitic agents

L32 ANSWER 6 OF 22 USPATFULL
TI Insect resistant plants

L32 ANSWER 7 OF 22 USPATFULL
TI Transgenic mice containing a disrupted p53 gene

L32 ANSWER 8 OF 22 USPATFULL
TI Insect resistant tomato and potato plants

L32 ANSWER 9 OF 22 USPATFULL
TI Method and system for removing impurities from aliments

L32 ANSWER 10 OF 22 USPATFULL
TI Processes for the recovery of microbially produced chymosin

L32 ANSWER 11 OF 22 USPATFULL
TI Method of producing and isolating IGG-binding protein a fusion peptides and a vector therefor

L32 ANSWER 12 OF 22 USPATFULL
TI Novel acetylpolyamine amidohydrolase

L32 ANSWER 13 OF 22 USPATFULL
TI Enzyme immobilization in a macroporous non-ionic resin

L32 ANSWER 14 OF 22 USPATFULL
TI Process for isomerizing glucose

L32 ANSWER 15 OF 22 USPATFULL
TI Constitutive glucose isomerase producer

L32 ANSWER 16 OF 22 USPATFULL
TI Method of purification of thermally stable enzymes

L32 ANSWER 17 OF 22 USPATFULL
TI Method of purifying glucose isomerase and a composition for storing same

L32 ANSWER 18 OF 22 USPATFULL
TI Enzymatic process using immobilized microbial cells

L32 ANSWER 19 OF 22 USPATFULL
TI Enzymatic process using immobilized microbial cells

L32 ANSWER 20 OF 22 USPATFULL
TI Aggregate of flocculated cells

L32 ANSWER 21 OF 22 USPATFULL
TI Aggregate of dried flocculated cells

L32 ANSWER 22 OF 22 USPATFULL
TI Fermentation of cephamycin C

=> d ab bib 9 10 12 16 18 20

L32 ANSWER 9 OF 22 USPATFULL
AB A method for improving the quality of an aliment, such as an alcoholic liquor, by removing impurities such as carbamates, sulfites and bioamines, includes contacting an aliment containing the impurity with a container formed of a membrane permeable to the impurity. The container encloses a non-diffusible reactant such as binding agents, neutralizing agents, oxidizing agents, transesterifying agents and hydrolyzing agents. The container and the contents are separated from the aliment after a period of time sufficient for the reactants to react with the impurity.
AN 94:93112 USPATFULL
TI Method and system for removing impurities from aliments
IN Seifter, Eli, New Hyde Park, NY, United States
Padawer, Jacques, Hastings-On-Hudson, NY, United States
Lalezari, Iraj, Scarsdale, NY, United States
PA Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, United States (U.S. corporation)
PI US 5358732 19941025
AI US 1993-105024 19930810 (8)
DT Utility
EXNAM Primary Examiner: Pratt, Helen
LREP Amster, Rothstein & Ebenstein
CLMN Number of Claims: 23
ECL Exemplary Claim: 1
DRWN 16 Drawing Figure(s); 8 Drawing Page(s)
LN.CNT 1022
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L32 ANSWER 10 OF 22 USPATFULL
AB Disclosed are methods for the recovery of microbially produced chymosin. In particular, disclosed are methods for the recovery of chymosin from the fermentation beer arising from culturing microorganisms which have been engineered so as to produce chymosin. Also disclosed are methods for the selective recovery and subsequent purification of microbially produced chymosin.
AN 92:68175 USPATFULL
TI Processes for the recovery of microbially produced chymosin
IN Heinsohn, Henry G., Pacifica, CA, United States
Lorch, Jeffrey D., San Mateo, CA, United States
Hayenga, Kirk J., San Mateo, CA, United States
Arnold, Raymond E., San Francisco, CA, United States
PA Genencor International, Inc., South San Francisco, CA, United States (U.S. corporation)
PI US 5139943 19920818
AI US 1990-537464 19900613 (7)
RLI Continuation-in-part of Ser. No. US 1989-365937, filed on 13 Jun 1989
DT Utility
EXNAM Primary Examiner: Patterson, Jr., Charles L.
LREP Burns, Doane, Swecker & Mathis
CLMN Number of Claims: 29
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 981
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L32 ANSWER 12 OF 22 USPATFULL
AB A novel acetylpolyamine amidohydrolase is described. The enzyme specifically hydrolyzes the amino bond in acetylputrescine, acetylcadaverine, acetylspermidine and acetylspermine with strong substrate affinity. The enzyme is preferably produced by culturing a microorganism belonging to the genus Mycoplana, and is used in the quantitative determination of ◇polyamine◇ contained in a living body sample, which is useful for cancer diagnosis.
AN 91:1085 USPATFULL
TI Novel acetylpolyamine amidohydrolase
IN Uwajima, Takayuki, Machida, Japan
Fujishiro, Kinya, Machida, Japan
Ando, Mayumi, Yokohama, Japan
PA Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan (non-U.S. corporation)
PI US 4981788 19910101
AI US 1988-212654 19880628 (7)
PRAI JP 1987-163821 19870630
DT Utility
EXNAM Primary Examiner: Kepplinger, Esther M.; Assistant Examiner: Scheiner,
Laurie A.
LREP Fitzpatrick, Cella, Harper & Scinto
CLMN Number of Claims: 4
ECL Exemplary Claim: 1
DRWN 13 Drawing Figure(s); 7 Drawing Page(s)
LN.CNT 930
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L32 ANSWER 16 OF 22 USPATFULL
AB A composition comprising intracellular or extracellular glucose isomerase may be purified by a method comprising heat treatment at a temperature from about 40.degree. C. to about 80.degree. C. The resultant enzyme solution, when utilized to prepare an immobilized enzyme system, is operationally equivalent to glucose isomerase purified by the traditional physico-chemical methods.
AN 81:8081 USPATFULL
TI Method of purification of thermally stable enzymes
IN Winans, Vida, Downers Grove, IL, United States

PA UOP Inc., Des Plaines, IL, United States (U.S. corporation)
PI US 4250263 19810210
AI US 1979-83568 19791113 (6)
DT Utility
EXNAM Primary Examiner: Shapiro, Lionel M.
LREP Hoatson, Jr., James R.; Nelson, Raymond H.; Page, II, William H.
CLMN Number of Claims: 6
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 317
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L32 ANSWER 18 OF 22 USPATFULL
AB Microbial cells having active enzymes associated therewith are subjected to flocculation conditions to produce a flocculated whole cell aggregate that .ladd.is subsequently dried. The dried aggregate .laddend.is useful in effecting enzyme-catalyzed chemical transformations. Substrates are brought into contact with the flocculated cell aggregates where they undergo chemical transformations in the presence of active enzymes associated with the cells.
AN 77:7585 USPATFULL
TI Enzymatic process using immobilized microbial cells
IN Lee, Chin K., Winston-Salem, NC, United States
Long, Margaret E., Winston-Salem, NC, United States
PA R. J. Reynolds Tobacco Company, Winston-Salem, NC, United States (U.S.
corporation)
PI US 29136 19770215
US 3821086 19740628 (Original)
AI US 1975-621707 19751014 (5)
US 1971-161337 19710709 (Original)
DT Reissue
EXNAM Primary Examiner: Monacell, A. Louis; Assistant Examiner: Wiseman, Thomas G.
LREP Haxton, Manford R.; Bluhm, Herbert J.
CLMN Number of Claims: 13
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 424
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L32 ANSWER 20 OF 22 USPATFULL
AB Microbial cells having active enzymes associated therewith are subjected to flocculation conditions to produce a flocculated whole cell aggregate that is useful in effecting enzyme-catalyzed chemical transformations. Substrates are brought into contact with the flocculated cell aggregates where they undergo chemical transformations in the presence of active enzymes associated with the cells.
AN 76:59632 USPATFULL
TI Aggregate of flocculated cells
IN Lee, Chin K., Winston-Salem, NC, United States
Long, Margaret E., Winston-Salem, NC, United States
PA R. J. Reynolds Tobacco Company, Winston-Salem, NC, United States (U.S.
corporation)
PI US 3989597 19761102
AI US 1975-621996 19751014 (5)
RLI Division of Ser. No. US 1976-455696, filed on 28 Mar 1976, now abandoned
which is a division of Ser. No. US 1971-161337, filed on 9 Jul 1971, now patented, Pat. No. US 3821086
DT Utility
EXNAM Primary Examiner: Monacell, A. Louis; Assistant Examiner: Wiseman, Thomas A.
LREP Haxton, Manford R.; Bluhm, Herbert J.
CLMN Number of Claims: 8
ECL Exemplary Claim: 1
DRWN No Drawings
LN.CNT 358
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> logoff

> s yeast?

L1 314451 YEAST?

=> s saccharomyces or torula

L2 149704 SACCHAROMYCES OR TORULA

=> s l1 or l2

L3 362087 L1 OR L2

=> s polyamine?

L4 89794 POLYAMINE?

=> s putrescine or spermine or spermidine

L5 32710 PUTRESCINE OR SPERMINE OR SPERMIDINE

=> s l4 or l5

L6 106197 L4 OR L5

=> s l3 and l6

L7 3254 L3 AND L6

=> s alkali? or base or basic or hydroxyde?

L8 3555770 ALKALI? OR BASE OR BASIC OR HYDROXYDE?

=> s hydroxide?

L9 485653 HYDROXIDE?

=> s l8 or l9

L10 3763445 L8 OR L9

=> s l3 (L) l6 (L) l10

L11 1984 L3 (L) L6 (L) L10

=> s l3 (p) l6 (p) l10

L12 99 L3 (P) L6 (P) L10

=> dup rem l12

PROCESSING COMPLETED FOR L12
L13 69 DUP REM L12 (30 DUPLICATES REMOVED)

=> d ti all

L13 ANSWER 1 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Manufacture of polyamine compositions with yeast
AN 2000:630818 CAPLUS
DN 133:206899
TI Manufacture of polyamine compositions with yeast
IN Tanimoto, Yoshihiro; Yakabe, Takashi; Nakano, Hiroshi; Shimatani, Masaji
PA Snow Brand Milk Products Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C12P013-00
ICS C07C209-62; C07C211-09; C07C211-14
CC 16-5 (Fermentation and Bioindustrial Chemistry)
Section cross-reference(s): 17
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000245493	A2	20000912	JP 1999-56833	19990304
EP 1035212	A2	20000913	EP 2000-104446	20000306

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO
PRAI JP 1999-56833 19990304
AB Polyamine compns., which may be useful as food additives, are manufd. by
digestion of the content of yeast cell with nuclease, or alk. hydrolysis of the content. Candida utilis was cultured in molasses medium, centrifuged, and the collected cell was extd. with aq. NaCl. The ext. was heated at 90.degree. in the presence of Fe chloride to coagulate protein, etc., and the supernatant was treated with HCl at 5.degree. to collect crude polyamine. The crude material was treated with nuclease A to manuf. 698 mg polyamine compn., vs. 142.6 mg, by a conventional method.
ST food additive polyamine manuf yeast nuclease; alk hydrolysis polyamine purifn yeast
IT Hydrolysis
(◊base◊; nuclease or alk. hydrolysis in manuf. of ◊polyamine◊ compns. with ◊yeast◊)
IT Candida utilis
Fermentation
Food additives
Saccharomyces cerevisiae
Yeast
(nuclease or alk. hydrolysis in manuf. of polyamine compns. with yeast)
IT Amines, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(polyamines, nonpolymeric; nuclease or alk. hydrolysis in manuf. of polyamine compns. with yeast)
IT 71-44-3P, Spermine 124-20-9P, Spermidine
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); PUR (Purification or recovery); BIOL (Biological study); PREP (Preparation)
(nuclease or alk. hydrolysis in manuf. of polyamine compns. with yeast)
IT 9026-81-7, Nuclease
RL: CAT (Catalyst use); USES (Uses)
(nuclease or alk. hydrolysis in manuf. of polyamine compns. with yeast)

=> d ti tot

L13 ANSWER 1 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Manufacture of polyamine compositions with yeast

L13 ANSWER 2 OF 69 USPATFULL
TI Actinomycete strains of ATCC 55984 and uses thereof for growth enhancement and control of pathogen infection in plants

L13 ANSWER 3 OF 69 USPATFULL
TI Telomere maintenance assays

L13 ANSWER 4 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Novel nucleic acids useful for producing genetically modified plants with improved stress tolerance and capable of expressing homoserine acetyltransferase.

L13 ANSWER 5 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Manufacture of ✪polyamine✪ compositions useful in infant nutritional products comprising digesting ✪yeast✪ somatic components with nuclease or hydrolyzing them with ✪alkali✪ and recovering ✪polyamine✪.

L13 ANSWER 6 OF 69 USPATFULL
TI Use of antibiotics of the type 2-deoxystreptamine substituted with aminosugars to inhibit growth of microorganisms containing group I introns

L13 ANSWER 7 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Oligonucleotide bioreversible phosphate esters used as, e.g. research agents.

L13 ANSWER 8 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 1
TI Map-based cloning of chloronerva, a gene involved in iron uptake of higher plants encoding nicotianamine synthase

L13 ANSWER 9 OF 69 USPATFULL
TI DNA encoding enzymes of the glycolytic pathway for use in alcohol producing yeast

L13 ANSWER 10 OF 69 USPATFULL
TI Trapping system for mediterranean fruit flies

L13 ANSWER 11 OF 69 USPATFULL
TI Expression of human serum albumin in Pichia pastoris

L13 ANSWER 12 OF 69 USPATFULL
TI Bidirectional in vitro transcription vectors utilizing a single RNA polymerase for both directions

L13 ANSWER 13 OF 69 USPATFULL
TI Human manganese superoxide dismutase (hMn-SOD)

L13 ANSWER 14 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 2
TI Characterization of Trypanosoma brucei .gamma.-glutamylcysteine synthetase, an essential enzyme in the biosynthesis of trypanothione (Diglutathionylspermidine)

L13 ANSWER 15 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Spermine binds in solution to the T.psi.C loop of tRNAPhe: Evidence from a 750 MHz 1H-NMR analysis

L13 ANSWER 16 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 3
TI Biochemical and chemical characterization of phenylglyoxal bis(guanylhydrazone), an aromatic analog of Mitoguazone

L13 ANSWER 17 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 4
TI Phylogenetic, structural and functional characteristics of the Na-K-Cl cotransporter family

L13 ANSWER 18 OF 69 USPATFULL
TI Human manganese superoxide dismutase (hMn-SOD)

L13 ANSWER 19 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 5
TI Molecular cloning and functional expression of Neurospora deoxyhypusine synthase cDNA and identification of yeast deoxyhypusine synthase cDNA

L13 ANSWER 20 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 6
TI Determination of the angle between the anticodon and aminoacyl acceptor stems of yeast phenylalanyl tRNA in solution

L13 ANSWER 21 OF 69 USPATFULL
TI Expression of human serum albumin in Pichia pastoris

L13 ANSWER 22 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Medium for regeneration of yeast protoplast - with carrageenan and poly amine in upper layer and agarose in lower layer.

L13 ANSWER 23 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 7
TI Structure and properties of casein kinase IIs from Allomyces arbuscula phosphorylating serine residues

L13 ANSWER 24 OF 69 USPATFULL
TI Human manganese superoxide dismutase (hMn-SOD)

L13 ANSWER 25 OF 69 USPATFULL
TI Human manganese superoxide dismutase (hMn-SOD)

L13 ANSWER 26 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 8
TI Translation initiation factor eIF-5A expressed from either of two yeast genes or from human cDNA. Functional identity under aerobic and anaerobic conditions

L13 ANSWER 27 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI New prepn. of di-acetyl poly amine amide hydrolase - by culturing microbe belonging to Alkaligenes, Pseudomonas, Fusarium, Candida in Trichosporon,
for use in drugs, agriculture chemicals.

L13 ANSWER 28 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 9
TI Assignment of the magnetic resonances of the imino protons and methyl protons of Bombyx mori tRNAGCCGly and the effect of ion binding on its structure

L13 ANSWER 29 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI ORNITHINE DECARBOXYLASE GENE OF NEUROSPORA-CRASSA ISOLATION SEQUENCE AND
POLYAMINE-MEDIATED REGULATION OF ITS MRNA.

L13 ANSWER 30 OF 69 USPATFULL
TI Process for detecting potential carcinogens

L13 ANSWER 31 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Binder for core and mould mixts. hardened by thermal drying - includes high molecular wt. polyethylene-poly amine and commercial alkaline lignosulphonate(s).

L13 ANSWER 32 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI PURIFICATION OF A PROTEIN HISTIDINE KINASE FROM THE YEAST SACCHAROMYCES-CEREVISIAE THE FIRST MEMBER OF THIS CLASS OF PROTEIN
KINASES.

L13 ANSWER 33 OF 69 AGRICOLA
TI Purification of a protein histidine kinase from the yeast Saccharomyces cerevisiae: the first member of the class of protein kinases.

L13 ANSWER 34 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Two new photoaffinity polyamines appear to alter the helical twist of DNA in nucleosome core particles

L13 ANSWER 35 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Ornithine decarboxylase gene of Neurospora crassa: isolation, sequence, and polyamine-mediated regulation of its mRNA

L13 ANSWER 36 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Microbial manufacture of heat-stable acyl polyamine amidohydrolase

L13 ANSWER 37 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Immunostimulatory compositions

L13 ANSWER 38 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS DUPLICATE 10
TI A LOW MOLECULAR WEIGHT DNA POLYMERASE FROM WHEAT EMBRYOS.

L13 ANSWER 39 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Fixing living catalyst on polyurethane resin - by emulsifying with alkaline cpds., adding living catalyst and dehydrating.

L13 ANSWER 40 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 11
TI Strong cellular preference in the expression of a housekeeping gene of Arabidopsis thaliana encoding S-adenosylmethionine synthetase

L13 ANSWER 41 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Hydration of transfer RNA molecules: a crystallographic study

L13 ANSWER 42 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 12
TI Isolation and characterization of an activator for Azotobacter vinelandii nicotinamide mononucleotide glycohydrolase

L13 ANSWER 43 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Influence of the polyamines spermine and spermidine on yeast tRNAPhe as revealed from its imino proton NMR spectrum

L13 ANSWER 44 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 13
TI Imino proton NMR assignments and ion-binding studies on Escherichia coli tRNA3Gly

L13 ANSWER 45 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 14
TI Anticodon-anticodon interactions in solution. Studies of the self-association of yeast or Escherichia coli tRNAAsp and of their interactions with Escherichia coli tRNAVal

L13 ANSWER 46 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 15
TI Frequency-pulsed electron capture gas-liquid chromatographic analysis of metabolites produced by Clostridium difficile in broth enriched with amino acids

L13 ANSWER 47 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 16
TI Comparison of inhibitors of S-adenosylmethionine decarboxylase from different species

L13 ANSWER 48 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 17
TI Transformation of intact yeast cells treated with alkali cations

L13 ANSWER 49 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Lignin sulphonate pptn. from sulphite waste liquor - with polyimine of low polarity forming alkali-soluble complex and removed by extn. with organic solvent.

L13 ANSWER 50 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 18
TI Increase of fidelity of polypeptide synthesis by spermidine in eukaryotic cell-free systems

L13 ANSWER 51 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 19
TI The regulatory role of spermine and fatty acid in the interaction of AMP deaminase with phosphofructokinase

L13 ANSWER 52 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Effect of spermine on the inhibition by fatty acid of AMP deaminase reaction as a control system of the adenylate energy charge in yeast

L13 ANSWER 53 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI CHARACTERIZATION OF DNA KINASE FROM CALF THYMUS.

L13 ANSWER 54 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 20
TI Properties of a purified nucleolar ribonuclease from Ehrlich ascites carcinoma cells

L13 ANSWER 55 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI CATION INDUCED TOROIDAL CONDENSATION OF DNA STUDIES WITH HEXAMINE COBALT
III.

L13 ANSWER 56 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI RNASE OF BOVINE SKELETAL MUSCLE.

L13 ANSWER 57 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 21
TI S-Adenosylmethionine levels and protein methylation during morphogenesis of Mucor racemosus

L13 ANSWER 58 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 22
TI Role of cations in the regulation of baker's yeast AMP deaminase

L13 ANSWER 59 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI CHARACTERIZATION OF ALKALINE NUCLEASE FROM RAT LIVER MITOCHONDRIA.

L13 ANSWER 60 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 23
TI Crystal and molecular structure of yeast phenylalanyl transfer RNA. Structure determination, difference Fourier refinement, molecular conformation, metal and solvent binding

L13 ANSWER 61 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 24
TI Crystal structure of yeast phenylalanine transfer RNA. II. Structural features and functional implications

L13 ANSWER 62 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
TI Diphenyl-alkylene polyamine antimicrobials - useful e.g. for topical application water treatment etc..

L13 ANSWER 63 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
TI EPIDERMAL NUCLEASES PART 2 THE MULTIPLICITY OF RNASE IN GUINEA-PIG
EPIDERMIS.

L13 ANSWER 64 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 25
TI Effect of magnesium and polyamines on the structure of yeast tRNAPhe

L13 ANSWER 65 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Microcalorimetric investigations of biopolymer aqueous solutions

L13 ANSWER 66 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Amino acid acceptance and physical properties of tRNAPheyeast

L13 ANSWER 67 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Factors affecting the flocculation of bacteria by chemical additives

L13 ANSWER 68 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Precipitation of ribosomes from Escherichia coli B by polymyxin B

L13 ANSWER 69 OF 69 CAPLUS COPYRIGHT 2001 ACS
TI Multiplicity of the amino acid permeases in Saccharomyces cerevisiae. I. Evidence for a specific arginine-transporting system

=> d ab bib 67 48 37 29 30 22

L13 ANSWER 67 OF 69 CAPLUS COPYRIGHT 2001 ACS
AB A ✪basic✪ study was made of some of the factors affecting the flocculation of bacteria. Most of the work reported was done with Pseudomonas fluorescens, and a few expts. are recorded with strains of Escherichia coli and Lactobacillus delbrueckii. Cells were grown in batch cultures with 0.5-3.0% glucose as a C source, with ✪yeast✪ ext. or nutrient broth and mineral salts. The cells were harvested, washed twice, and suspended in 0.005M NaOAc or 0.0067M K phosphate buffer (pH 7.0 .+-. 0.3). The chief flocculants used were Primafloc C-7, a cationic ✪polyamine✪, and Baymal. Small pos. charged alumina fibrils were large enough that electron microscopy could be employed to study the flocculation mechanism. Prior to addn. of flocculant, washed cell suspensions were dild. to an absorbance of 0.35-0.55 and measured at 525 m.mu.. The mechanism of cell flocculation by chem. additives appears to be a highly complex phenomenon. Many of the factors affecting flocculation are related to the presence of of biol. polymers (proteins, polysaccharides, and nucleic acids) released by the cell. Their presence may either increase or decrease the amt. of flocculant required for cellular aggregation. RNA and cellular proteins are released from washed cells of E. coli and P. fluorescens, and their presence increases the amt. of flocculant required for flocculation. Bivalent cations, esp. Mg2+, act as flocculant aids with the above 2 microorganisms. Other interacting variables observed are: temp., physiol. age, flocculant, bacterial genus, and surface shear.
AN 1969:488862 CAPLUS
DN 71:88862
TI Factors affecting the flocculation of bacteria by chemical additives
AU McGregor, W. C.; Finn, R. K.
CS Cornell Univ., Ithaca, N. Y., USA
SO Biotechnol. Bioeng. (1969), 11(2), 127-38
CODEN: BIBIAU
DT Journal
LA English

L13 ANSWER 48 OF 69 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 17
AB Intact ✪yeast✪ cells treated with ✪alkali✪ cations took up plasmid DNA. Li+, Cs+, Rb+, K+, and Na+ were effective in inducing competence. Conditions for the transformation of ✪Saccharomyces✪ cerevisiae D13-1A with plasmid YRp7 were studied in detail with CsCl. The optimum incubation time was 1 h, and the optimum cell concn. was 5 .times. 107 cells/mL. The optimum concn. of Cs+ was 1.0M. Transformation efficiency increased with increasing concns. of plasmid DNA. Polyethylene glycol was absolutely required. Heat pulse and various ✪polyamines✪ or ✪basic✪ proteins stimulated the uptake of plasmid DNA. Besides circular DNA, linear plasmid DNA was also taken up by Cs+-treated ✪yeast✪ cells, although the uptake efficiency was considerably reduced. The transformation efficiency with Cs+ or Li+ was comparable to that of conventional protoplast methods for a plasmid contg. arsl, although not for plasmids contg. a 2.mu.m origin replication.
AN 1983:122625 CAPLUS
DN 98:122625
TI Transformation of intact yeast cells treated with alkali cations
AU Ito, Hisao; Fukuda, Yasuki; Murata, Kousaku; Kimura, Akira
CS Res. Inst. Food Sci., Kyoto Univ., Kyoto, 611, Japan
SO J. Bacteriol. (1983), 153(1), 163-8
CODEN: JOBAAY; ISSN: 0021-9193
DT Journal
LA English

L13 ANSWER 37 OF 69 CAPLUS COPYRIGHT 2001 ACS
AB Nutritional compns. for parenteral or enteral administration comprise (a) a compd. assocd. with the synthesis of ✪polyamines✪ (e.g. arginine); (b) a nucleic acid ✪base✪ source (preferably RNA); (c) omega-3 polyunsatd. fatty acids; and (d) omega-6 polyunsatd. fatty acids. The compns. improved the host immune defense mechanisms. Thus, compn. A contained protein caseinates 65.0, arginine 18.75, maltodextrins 197.6, Captex 710A (lipids) 25.0, menhaden oil 16.75, and ✪yeast✪ RNA 1.88 g/1500 cm3. Intensive care patients, demonstrating sepsis or sepsis syndrome, were enterally administered compn. A or a com. prepn. Osmolite HN. After 7 days, patients receiving compn. A had increased lymphocyte response to ConA in vitro.
AN 1991:30136 CAPLUS
DN 114:30136
TI Immunostimulatory compositions
IN Alexander, J. Wesley; Babayan, Vigen K.; Blackburn, George L.; Cerra, Frank B.; Daly, John M.; Gersovitz, Mitchell T.; Kinsella, John E.; Licari, Jerome J.; Rudolph, Frederick; Van Buren, Charles T.
PA Sandoz A.-G., Switz.; Sandoz-Patent-G.m.b.H.; Sandoz-Erfindungen Verwaltungsgesellschaft m.b.H.
SO Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW

DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 367724	A1	19900509	EP 1989-810809	19891027
EP 367724	B1	19930210		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AT 85525	E	19930215	AT 1989-810809	19891027
ES 2052066	T3	19940701	ES 1989-810809	19891027
CA 2001727	AA	19900430	CA 1989-2001727	19891030
CA 2001727	C	19980217		
DK 8905403	A	19900501	DK 1989-5403	19891030
AU 8943860	A1	19900503	AU 1989-43860	19891030
AU 626930	B2	19920813		
JP 02191213	A2	19900727	JP 1989-282844	19891030
JP 2520488	B2	19960731		
US 5231085	A	19930727	US 1992-837712	19920219
PRAI US 1988-265373		19881031		
US 1989-305877		19890202		
US 1989-421045		19891013		
EP 1989-810809		19891027		

L13 ANSWER 29 OF 69 BIOSIS COPYRIGHT 2001 BIOSIS
AB Ornithine decarboxylase (ODC), which initiates the biosynthesis of the ✪polyamines✪ ✪putrescine✪, ✪spermidine✪, and ✪spermine✪, is encoded by the spe-1 gene of the fungus Neurospora crassa. This gene and its cDNA have been cloned and sequenced. The gene has a single 70-nucleotide intron in the coding sequence. The cDNA, comprising the entire coding region, recognizes a single 2.4-kb mRNA in Northern (RNA) blots. The mRNA transcript, defined by S1 mapping, has an extremely long, 535-✪base✪ leader without strong secondary-structure features or an upstream reading frame. The translational start of the protein is ambiguous: a Met-Val-Met sequence precedes the Pro known to be the N terminus of the ODC polypeptide. The polypeptide encoded by the N. crassa spe-1 gene (484 amino acids) has 46% amino acid identity with that of ✪Saccharomyces✪ cerevisiae (466 amino acids) and 42% with that of mouse (461 amino acids). Alignment of the longer N. crassa sequence with S. cerevisiae and mouse sequences creates gaps in different sites in the S. cerevisiae and mouse sequences, suggesting that N. crassa ODC is closer to an ancestral form of the enzyme than that of either ✪yeast✪ or mouse ODC. N. crassa ODC, which turns over rapidly in vivo in the presence of ✪polyamines✪, has two PEST sequences, found in most ODCs and other proteins with rapid turnover. In striking contrast to other eucaryotic organisms, the variation in the rate of ODC synthesis in response to ✪polyamines✪ in N. crassa is largely correlated with proportional changes in the abundance of ODC mRNA. ✪Spermidine✪ is the main effector of repression, while ✪putrescine✪ has a weaker effect. However, ✪putrescine✪ accumulation appears to increase the amount of active ODC that is made from a given amount of ODC mRNA, possibly by improving its translatability. Conversely, prolonged starvation for both ✪putrescine✪ and ✪spermidine✪ leads to the differentially impaired translation of ODC mRNA.
AN 1992:96392 BIOSIS
DN BA93:52942
TI ORNITHINE DECARBOXYLASE GENE OF NEUROSPORA-CRASSA ISOLATION SEQUENCE AND POLYAMINE-MEDIATED REGULATION OF ITS MRNA.
AU WILLIAMS L J; BARNETT G R; RISTOW J L; PITKIN J; PERRIERE M; DAVIS R H
CS DEP. MOLECULAR BIOLOGY BIOCHEMISTRY, UNIV. CALIF. IRVINE, IRVINE, CALIF. 92717.
SO MOL CELL BIOL, (1992) 12 (1), 347-359. CODEN: MCEBD4. ISSN: 0270-7306.
FS BA; OLD
LA English

L13 ANSWER 30 OF 69 USPATFULL
AB There is provided a process for screening an agent in order to determine whether such agent increases the frequency of genome rearrangement in living matter.

In the first step of this process, there is provided a viable species of Saccharomyces cerevisiae yeast which comprises repeated genetic elements in its haploid genome. These repeated genetic elements are selected from the group consisting of functional and non-functional genetic elements; and these elements are sufficiently homologous so that, under ambient conditions, they recombine with each other and give rise to an indentifiable genome rearrangement which is a deletion.

In the second step of this process, the viable species of yeast is exposed to the agent to be tested. Thereafter, it is plated onto a growth medium which, after the exposed yeast species grows upon it, facilitates the identification of those yeast which have undergone said genome rearrangement.

In the last step of the process, the extent to which the exposed species of yeast has undergone genome rearrangement is determined.

Also disclosed is a the viable yeast strain used in said process, the plasmid used to construct said strain, and a process for constructing said strain.
AN 91:18874 USPATFULL
TI Process for detecting potential carcinogens
IN Schiestl, Robert H., Rochester, NY, United States
PA GeneBioMed, Inc., Rochester, NY, United States (U.S. corporation)
PI US 4997757 19910305
AI US 1988-193345 19880512 (7)
RLI Continuation-in-part of Ser. No. US 1987-137325, filed on 23 Dec 1987, now abandoned
DT Utility
EXNAM Primary Examiner: Teskin, Robin L.
LREP Greenwald, Howard J.
CLMN Number of Claims: 20
ECL Exemplary Claim: 1
DRWN 10 Drawing Figure(s); 7 Drawing Page(s)
LN.CNT 2479
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L13 ANSWER 22 OF 69 WPIDS COPYRIGHT 2001 DERWENT INFORMATION LTD
AB JP 06217759 A UPAB: 19941102
Medium for regeneration of ✪yeast✪ protoplast consists of two solid layers, with (pref. upper) medium layer contg. carrageenan (6-10 g/L) and ✪polyamine✪ (0.1-0.5 g/L) and the (pref. lower) medium layer contg. agarose (6-10 g/L).

Pref. the ratio of carrageenan to the ✪polyamine✪ is in 12-100 to 1. The ratio of carrageenan/✪polyamine✪ layer to the agarose layer is 1/2-1/3 by volume. The osmotic pressure is kept at 0.4-0.6 osmol.

USE/ADVANTAGE - ✪Yeast✪ protoplast is regenerated on the medium in high frequency. ✪Yeast✪ protoplast is prepd. by cell fusion between ✪yeasts✪ having no genetic selection marker can be easily grown. The ✪polyamine✪ is e.g. ✪spermidine✪, ✪spermine✪, ✪putrescine✪, cadaverine, homospermidine and norspermidine. The incubation is carried out at 30-35 deg.C. The ✪yeast✪ protoplast is inoculated as a thin layer.

In an example, protoplast was prepd. from ✪yeasts✪ BSRI YB3-8 and BSRI YB-12 by cell fusion with a cell wall lyase (thymolyase 20T) in an electro-fusion apparatus. The fused protoplast was regenerated on a medium consisting of the upper layer (20g/L glucose, 20 g/L bactopeptone, 10 g/L ✪yeast✪ extract, 6.7g ✪yeast✪ nitrogen ✪base✪ , 7.5g/L NaCl, 8 g/L carrageenan and 0.1 g/L ✪spermidine✪) and the lower layer (20 g/L glucose, 20 g/L bactopeptone, 10 g/L ✪yeast✪ extract, 6.7 g/L ✪yeast✪ nitrogen ✪base✪, 7.5 g/L NaCl and 8 g/L agarose). In carrying out the regeneration, 3 ml of a mixt. of protoplast and the upper layer was spread on 10 ml of the lower layer in a Petri dish at 35 deg.C. The rate of regeneration was 15-70 times in comparison with that of the prior art.
Dwg.0/1
AN 1994-290006 [36] WPIDS
DNC C1994-131818
TI Medium for regeneration of yeast protoplast - with carrageenan and poly amine in upper layer and agarose in lower layer.
DC D16
PA (SAPB) SAPPORO BREWERIES
CYC 1
PI JP 06217759 A 19940809 (199436)* 4p
ADT JP 06217759 A JP 1993-27141 19930125
PRAI JP 1993-27141 19930125

=> d his

(FILE 'HOME' ENTERED AT 15:36:46 ON 04 APR 2001)

FILE 'CAPLUS, BIOSIS, USPATFULL, AGRICOLA, WPIDS' ENTERED AT 15:37:07 ON 04 APR 2001
L1 314451 S YEAST?
L2 149704 S SACCHAROMYCES OR TORULA
L3 362087 S L1 OR L2
L4 89794 S POLYAMINE?
L5 32710 S PUTRESCINE OR SPERMINE OR SPERMIDINE
L6 106197 S L4 OR L5
L7 3254 S L3 AND L6
L8 3555770 S ALKALI? OR BASE OR BASIC OR HYDROXYDE?
L9 485653 S HYDROXIDE?
L10 3763445 S L8 OR L9
L11 1984 S L3 (L) L6 (L) L10
L12 99 S L3 (P) L6 (P) L10
L13 69 DUP REM L12 (30 DUPLICATES REMOVED)

=> logoff

WEST

Generate Collection

L21: Entry 5 of 6 File: DWPI Oct 15, 1990

DERWENT-ACC-NO: 1990-352482
DERWENT-WEEK: 199047

TITLE: Rapid prepn. of yeast extract - by loading super-high pressure on yeast cell body to remove contents

PATENT-ASSIGNEE:

ASSIGNEE	CODE
CHUETSU KOBO KOGYO	CHUEN
NIPPON KOKAN KKGYO	NIKN

PRIORITY-DATA: 1989JP-0073231 (March 25, 1989)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 02255059 A	October 15, 1990	N/A	000	N/A

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP02255059A	March 25, 1989	1989JP-0073231	N/A

INT-CL (IPC): A23L 1/28; C12N 1/16

ABSTRACTED-PUB-NO: JP02255059A
BASIC-ABSTRACT:

Essence from yeast body is extracted by loading super-high pressure of above 3000 kg/cm2 on yeast body.

USE/ADVANTAGE - Yeast extract is a useful substance as the component for the culture medium of microbe use and seasoning. Hitherto yeast extract has been prepd. by autolysing yeast body at 40 deg.C for 24 hours in the presence of - 1.0% of toluene as antiseptic. By loading pressure above 3000 kg/cm2 on yeast body, most of yeast is dead and the content of yeast body is pressed out. Yeast extract can be prepd. in a short time without heating and using toxic solvent. Extract has high concn. and the extract is free of the bitterness which is often found by conventional yeast extract causing from heating process.

CHOSEN-DRAWING: Dwg.0/2

TITLE-TERMS: RAPID PREPARATION YEAST EXTRACT LOAD SUPER HIGH PRESSURE YEAST CELL BODY REMOVE CONTENT

DERWENT-CLASS: D13 D16

CPI-CODES: D03-H01C; D05-B04;

SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: C1990-153111

2 ANSWER 9 OF 22 USPATFULL

AB A method for improving the quality of an aliment, such as an alcoholic liquor, by removing impurities such as carbamates, sulfites and bioamines, includes contacting an aliment containing the impurity with a container formed of a membrane permeable to the impurity. The container encloses a non-diffusible reactant such as binding agents, neutralizing agents, oxidizing agents, transesterifying agents and hydrolyzing agents. The container and the contents are separated from the aliment after a period of time sufficient for the reactants to react with the impurity.

AN 94:93112 USPATFULL

TI Method and system for removing impurities from aliments

IN Seifter, Eli, New Hyde Park, NY, United States
Padawer, Jacques, Hastings-On-Hudson, NY, United States
Lalezari, Iraj, Scarsdale, NY, United States

PA Albert Einstein College of Medicine of Yeshiva University, Bronx, NY, United States (U.S. corporation)

PI US 5358732 19941025

AI US 1993-105024 19930810 (8)

DT Utility

EXNAM Primary Examiner: Pratt, Helen

LREP Amster, Rothstein & Ebenstein

CLMN Number of Claims: 23

ECL Exemplary Claim: 1

DRWN 16 Drawing Figure(s); 8 Drawing Page(s)

LN.CNT 1022